

# BIODIVERSITY IN A CHANGING WORLD

The rich tapestry of life on our planet is the outcome of over 3.5 billion years of evolutionary history. It has been shaped by forces such as: changes in the planet's crust, ice ages, fire, and interaction among species. Now, it is increasingly being altered by humans through our habitat changes to benefit us. The impacts of human activities reach into every corner of the natural world. For instance, between one third and one half of the Earth's land surface has been substantially transformed by agriculture, urbanization, and commercial activities of various kinds; about one quarter of all bird species have been driven to extinction; and more than one half of all accessible surface water, as well as an enormous quantity of groundwater, is diverted for human uses. It is estimated that 25% of all species could go extinct in the next ten years.

These uses have brought unquestionable benefits to human welfare. But the upshot of this growing human domination of the planet is that no ecosystem on Earth is free from pervasive human influence.

The term 'biodiversity' is indeed commonly used to describe the number, variety and variability of living organisms. It has become a widespread practice to define biodiversity in terms of genes, species and ecosystems, corresponding to three fundamental levels of biological organization.

It is evident that a certain level of biological diversity is necessary to provide the material basis of human life: at one level to maintain the biosphere as a functioning system and, at another, to provide the basic materials for agriculture and other needs.

Over geological time, all species have a finite span of existence. Species extinction is therefore a natural process, which occurs without the intervention of man. However, it is beyond question that extinctions caused directly or indirectly by man are occurring at a rate, which far exceeds any reasonable estimates of background extinction rates. Management of our ecosystems intended to maintain one facet of biodiversity will not necessarily maintain another facet which may be just as important.

Perhaps because the living world is most widely considered in terms of species, biodiversity is very commonly used as a synonym of species diversity, in particular of 'species richness', which is the number of species in a site or habitat. Marine habitats frequently have more different phyla but fewer species than terrestrial habitats. Species diversity in natural habitats is high in warm areas and decreases with increasing latitude and altitude. On land, diversity is also usually higher in areas of high rainfall and lower in drier areas. The richest areas are undoubtedly tropical moist forests. In aquatic areas most life is found near the shoreline.

- Biodiversity changes as man manipulates his environment- is this good or bad?
- Biodiversity changes are a natural process- how does acceleration of our environmental changes affect it?
- Biodiversity has changed or changes as a result of our activities
  1. Land disturbance activities
  2. Acidification of our terrestrial and aquatic habitats
  3. Pollution
  4. Invasive and alien species
  5. Global warming
  6. Responses to natural disasters
  7. Desertification
  8. Manipulation of genetics in plants and animals
  9. Damming free flowing streams & rivers
  10. Population growth